Having fully described our invention, We Claim:

1. In a high-Q resonant circuit transmitter, having a transmitter coil, carrying a transmitter coil current, the improvement comprising:

a means for frequency-shift-keyed modulation of a transmitter coil current whereby the frequency of said transmitter coil current is substantially instantaneously changed in a manner that results in little to no energy loss from the high-Q resonant circuit transmitter.

2. In a high-Q resonant transmitter as in Claim 1, further comprising storage means for storage of energy of said high-Q resonant circuit transmitter during said frequency-shift-keyed modulation of said transmitter coil current.

3. In a high-Q resonant circuit transmitter as in Claim 1, further comprising switching means having conducting and non-conducting states, wherein said switching means switches between a conducting and non-conducting state to produce said frequency-shift-keyed modulation of said transmitter coil current.

4. In a high-Q resonant circuit transmitter as in Claim 2, wherein said storage means comprises at least one capacitor.

5. A method for frequency-shift-keyed modulation of a transmitter coil current of a high-Q resonant circuit transmitter, said transmitter having one or more distinct states of operation characterized by one or more distinct frequencies, comprising:

storing energy within said high-Q resonant circuit transmitter; and

switching of said stored energy so as to instantaneously change the frequency of said transmitter coil current.

6. A method for frequency-shift-keyed modulation of a transmitter coil current of a high-Q resonant circuit transmitter as in Claim 5, wherein the stored energy of said resonant circuit is stored in at least one capacitor.

7. A method for frequency-shift-keyed modulation of a transmitter coil current of a high-Q resonant circuit transmitter as in Claim 5, wherein the transition time between said distinct states is approximately zero.

8. A method for frequency-shift-keyed modulation of a transmitter coil current of a high-Q resonant circuit transmitter as in Claim 5, wherein the operation of said high-Q resonant circuit transmitter during said distinct states is independent between said states.

9. A method for frequency-shift-keyed modulation of a transmitter coil current of a high-Q resonant circuit transmitter as in Claim 5, wherein said distinct states are characterized by a high and low frequency.

10. A method for frequency-shift-keyed modulation of a transmitter coil current of a high-Q resonant circuit transmitter as in Claim 5, wherein switching between said distinct states is accomplished with little to no energy loss.

11. In a frequency-shift-keyed demodulation receiver circuit, for decoding a frequency-shift-keyed signal having multiple half cycles, the improvement comprising:

means for decoding said frequency-shift-keyed signal by comparing the time duration of one or more of said half-cycles of said frequency-shift-keyed signal to an average value of the time duration of multiple half-cycles of said frequency-shift-keyed signal.

12. In a frequency-shift-keyed demodulation receiver circuit as in Claim 11, wherein said decoding means comprises a multiphase demodulator.

13. In a frequency-shift-keyed demodulation receiver circuit as in Claim 12, wherein said multiphase demodulator comprises one or more averaging capacitors and one or more adaptive threshold detectors.

14. A method for frequency-shift-keyed demodulation of an alternating current waveform having multiple half-cycles, comprising:

comparing the time duration of one or more half-cycles of said alternating current waveform to an average value of the time duration of multiple half-cycles of said alternating current waveform.

15. A method for frequency-shift-keyed demodulation of an alternating current waveform having multiple half-cycles as in Claim 14, wherein the comparison of said time duration is accomplished using a multiphase demodulator circuit.

16. A method for frequency-shift-keyed demodulation of an alternating current waveform having multiple half-cycles as in Claim 14, wherein comparison of the average of multiple time durations is accomplished using one or more averaging capacitors.

17. A power and communication system for an implantable device comprising:

a high-Q resonant circuit transmitter;

a means for producing frequency-shift-keyed modulation of a transmitter coil current whereby the frequency of said transmitter coil current is substantially instantaneously changed in a manner that results in little to no energy loss from the transmitter circuit; and

a frequency-shift-keyed demodulation circuit whereby said demodulation circuit comprises means for decoding a frequency-shift-keyed signal by comparing the time duration of one or more half-cycles of said frequency-shift-keyed signal to an average value of the time duration of multiple half-cycles of said frequency-shift-keyed signal.

18. A power and communication system as in Claim 17, further comprising storage means for storage of energy of said resonant circuit during said frequency-shift-keyed modulation of said transmitter coil current.

19. A power and communication system as in Claim 17, further comprising switching means having conducting and non-conducting states, said switching means to switch between a conducting and non-conducting state to produce said frequency-shift-keyed modulation of said transmitter coil current.

20. A power and communication system as in Claim 18, wherein said storage means comprises at least one capacitor.

21. A power and communication system as in Claim 17, wherein said frequency-shift-keyed demodulation circuit comprises a multiphase demodulator.

22. A power and communication system as in Claim 21, wherein said multiphase demodulator comprises one or more averaging capacitors and one or more adaptive threshold detectors.